Small Business Innovation Research/Small Business Tech Transfer

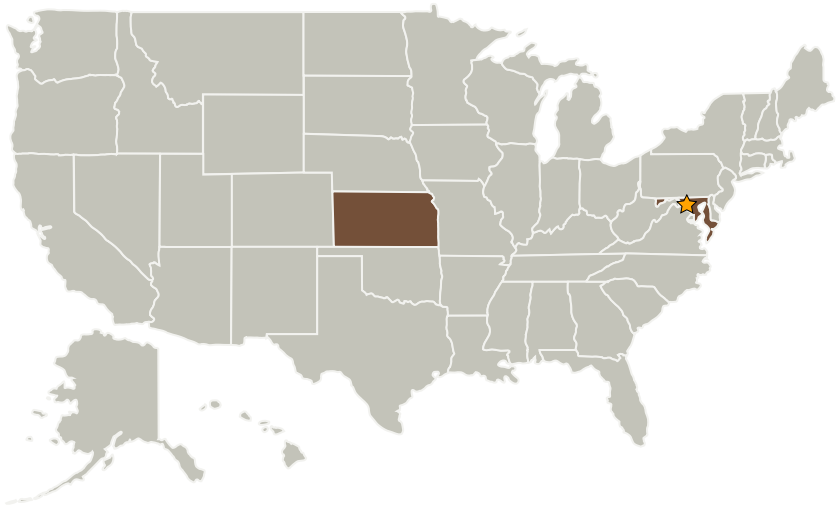
AlN Based Extreme Ultraviolet (EUV) Detectors, Phase I

Completed Technology Project (2006 - 2007)

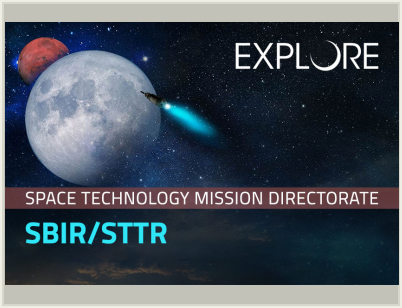
Project Introduction

This Phase I project is to investigate the feasibility for achieving EUV detectors for space applications by exploiting the ultrahigh bandgap semiconductor - AlN. We plan to devise methods to improve the AlN epitaxial material quality and device structures for EUV detectors. Specifically, we will study the properties of Si and Mg doped AlN epilayers and investigate n- and p-type doping issues in AlN and hence the feasibility for achieving high performance EUV detectors; improve the AlN material quality by exploiting novel template/substrates and growth schemes to reduce the dislocation and native defect density. Use knowledge gained from these investigations to provide new understanding of the III-nitride system and to improve EUV detector structural design. It is intended that EUV detector wafers will also be delivered to NASA scientists for the fabrication of detector arrays. Improved performances of AlN based EUV detectors over conventional existing technologies are expected.

Primary U.S. Work Locations and Key Partners



Organizations Performing Work	Role	Type	Location
★Goddard Space Flight Center(GSFC)	Lead Organization	NASA Center	Greenbelt, Maryland
III-N Technology, Inc.	Supporting Organization	Industry	Manhattan, Kansas



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Organizational Responsibility

Responsible Mission Directorate:

Space Technology Mission Directorate (STMD)

Lead Center / Facility:

Goddard Space Flight Center (GSFC)

Responsible Program:

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Primary U.S. Work Locations	
Kansas	Maryland

Project Management

Program Director:

Jason L Kessler

Program Manager:

Carlos Torrez

Principal Investigator:

Jing Li

Technology Areas

Primary:

- TX08 Sensors and Instruments
  - TX08.1 Remote Sensing Instruments/Sensors
    - TX08.1.1 Detectors and Focal Planes